

Referee's Report of PhD Thesis by Anna Píšková.

By Dr Ian Boomer, University of Birmingham.

The thesis can be divided into two key parts, first, an introduction to the reconstruction of past climates through the investigation of various proxy techniques and second, an 'experimental' section in which climatic/palaeoenvironmental reconstructions are made from 2 cores, one each from the Aral Sea and Lake Baikal, each on very different timescales. The thesis is in English throughout and is generally well-written although there are occasional passages which are unclear and there are some minor typographical errors. In general the text is concise and comprehensible.

Although the first section deals with many different approaches, the candidate's main approach has been though the application of diatom assemblages together with some geochemical and sedimentary analyses. The introductory section is therefore a little unfocussed in having to cover such a wide-ranging topic, but this does help to show a good breadth of understanding of the discipline.

In the second 'experimental' section, the choice of core material is a little odd given that the Aral Sea and Lake Baikal are situated in different climatic zones and have markedly different hydrology & physiography, this could have been discussed and explained more fully in the introductory section. It is not made clear what specific objectives were behind the selection of these cores in particular (this could have been done on page 4), other than them being available for study, and what scientific questions were being addressed. The timescales are also quite different, an approximately 2000 year interval studied in the Aral Sea and about 300,000 for Lake Baikal. However, the introductory section for both sites are well-presented and cover the main points well.

The studies of the cores themselves are detailed, at an appropriate resolution and show good integration with pre-existing data including, importantly, the timescales. The analytical sections provide well-written data summaries although the interpretations appear more journal-like than thesis-like in style, i.e. the raw data is rarely presented (diatom counts, tabulated XRF & susceptibility data, etc) and indeed these do not appear to be available at all (CD-ROM?). In a British thesis this would be a major problem, but I leave this point for the examiners.

The candidate shows clearly where her work has contributed to existing and planned publications. I have no doubt that the quality of the candidates work is high, particularly in the discussion of the Aral and Baikal data. The candidate has shown good interpretative and integration skills throughout. She has presented a high-quality thesis that shows a clear understanding of laboratory skills through to data interpretation and presentation. The thesis does lack a 'thread' that pulls the two chosen core sites together, the use of a common analytical approach does not in itself achieve this but the separate studies are themselves of high quality.

I believe this to be a strong thesis, I have no major concerns of the scientific content and would be happy to support the award of a PhD to the candidate.